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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/294,617	04/19/1999	ANDREW T. JENNINGS	TN137	6329

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EXAMINER

KENDALL, CHUCK O

ART UNIT PAPER NUMBER

2122

DATE MAILED: 02/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.:

09/294,617

Applicant(s)

JENNINGS ET AL.

Examiner

Chuck Kendall

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 33 is/are allowed.
- 6) ☒ Claim(s) 1-15 and 18-32 is/are rejected.
- 7) ☒ Claim(s) 16,17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/19/2004 has been entered.
2. Claims 1 – 31 have been amended and claims 32 and 33 have been added.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 5, 9, 10, 13, 19, 20, 23, 27, & 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Goettlemann et al. 5,313,614.

With regards to claim 1, Goettlemann anticipates a system (FIG.1), method (Col.31: 60-32:45), product (Col.2: 45 – 65) (for emulating (FIG.5, part # 53) the execution of a target program comprising instructions of an instruction set of a target computer on a host computer having a different instruction set (FIG.5, 58), said method comprising; performing a static translation of the instructions of the target program into a series of instructions of an intermediated instruction set, the intermediate instruction set being optimized for interpretation on the host computer (Col.20-55-65); executing the series of instructions of the intermediate instruction set by interpretation directly by the host computer (see Col.13: 63 – Col. 14: 3 for translating directly to target machine, also refer to 31:50 – 55, for interpretation).

With regards to claims 2 & 27, wherein the intermediate instruction set comprises a plurality of control words that are derived, at least in part, by mapping control words of the instruction set of the target machine into the fundamental word size of the host machine (Col. 20:5-15).

With regards to claim 5, as recited in claim 1 wherein the intermediate instruction set comprises a plurality of controls words derived from control words of the instruction set of the target machine in a manner that reduces the number of different forms of control words in the intermediate instruction set (Goettlemann, Col. 15:65 -16:5).

Regarding claim 9, which is the system version of the method in claim 1, see rationale as discussed above.

Regarding claim 10, which is the system version of the method in claim 2, see rationale as discussed above.

Regarding claim 13, which is the system version of the method in claim 5, see rationale as discussed above.

Regarding claim 19, which is the computer readable version of the method in claim 1, see rationale as discussed above.

Regarding claim 20, which is the computer readable version of the method in claim 1, see rationale as discussed above.

Regarding claim 23, which is the computer readable version of the method in claim 5, see rationale as discussed above.

Regarding claim 32, which is the system version of the method in claim 1, see rationale as discussed above.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior

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art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 4 - 8, 11, 12, 14 - 18, 21, 22, 24 - 26, & 28 - 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goettlemann et al. 5,313,614 as applied in claim 1, in view of Horwart USPN 6,021,275.

With regards to claim 3, Goettlemann discloses all the claimed limitations as applied in claim 1. Goettlemann doesn't explicitly disclose wherein the intermediate instruction set comprises a plurality of control words that are derived by redefining control words of the target computer to minimize the number of masking and shifting operations needed to decode the plurality of control words of the intermediate instruction set. However Horwart does disclose this feature (Horwart, 21:62-67 to 22:15, also see 20 -25 for word contained in each record). Therefore it would have been obvious to one of ordinary skill art at the time the invention was made to combine Goettlemann with Horwart because, redefining the control words for that particular system would make interpreting the code more efficient.

With regards to claim 4, Goettlemann discloses all the claimed limitations as applied in claim 1. Goettlemann doesn't explicitly disclose wherein the intermediate instruction set comprises a plurality of different types of control words having formats defined to minimize the time needed to determine the type of a control word. However Horwart does disclose this feature (Horwart, 20:45-63). Therefore it would have been obvious to one of ordinary skill art at the time the invention was made to combine Goettlemann with Horwart because, defining the control words for a plurality of different formats would make mapping or interpreting for more than one system or architecture.

With regards to claim 7, Goettlemann discloses all the claimed limitations as applied in claim 1. Goettlemann doesn't explicitly disclose wherein the instructions of the intermediate instruction set have a fixed length and do not cross code word boundaries. However Horwart does disclose this feature (Horwart, 24:63-65, see aligning on byte boundaries). Therefore it would have been obvious to one of ordinary skill art at the time the invention was made to combine Goettlemann with Horwart because, "The mapping process must replicate all such side

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effects faithfully because the creator of the program being translated may have indeed relied on them in unforeseeable ways" (Goettlemann, Col.20:11-15).

With regards to claim 7, Goettlemann discloses all the claimed limitations as applied in claim 1. Goettlemann doesn't explicitly disclose wherein zero-address instructions of the instruction set of the target machine for pushing data onto a stack for use in a subsequent zero-address instruction operation are incorporated as explicit addresses into a new instruction in the intermediate instruction set for performing that operation, thereby reducing the number of different instructions in the intermediate instruction set. However, Horwart does disclose this feature (Horwart, see table on the bottom of column 30 for allocating stack and zero address instruction). Therefore it would have been obvious to one of ordinary skill art at the time the invention was made to combine Goettlemann with Horwart because, using zero instructions for subsequent, zero address instructions would reduce instruction overhead and redundancies.

Regarding claim 12, which is the system version of the method in claim 4, see rationale as discussed above.

Regarding claim 14, which is the system version of the method in claim 6, see rationale as discussed above.

Regarding claim 15, which is the system version of the method in claim 7, see rationale as discussed above.

Regarding claim 18, which is the system version of the method in claim 8, see rationale as discussed above.

Regarding claim 20, which is the computer readable version of the method in claim 3, see rationale as discussed above.

Regarding claim 20, which is the computer readable version of the method in claim 4, see rationale as discussed above.

Regarding claim 24, which is the computer readable version of the method in claim 6, see rationale as discussed above.

Regarding claim 25, which is the computer readable version of the method in claim 7, see rationale as discussed above.

Regarding claim 26, which is the computer readable version of the method in claim 8, see rationale as discussed above.

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Regards, to claim 28 see reasoning in claim 3.

Regards, to claim 29 see reasoning in claim 4

Regards, to claim 30 see reasoning in claim 6.

Regards, to claim 31 see reasoning in claim 8.

Allowable subject matter

7. Claims 16, 17, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

“...wherein the code translator runs as a user mode process under control of a host operating system on the host computer, and wherein the interpreter runs as a kernel mode driver thread under the host operating system”.

“...wherein the emulation system may comprise multiple instances of the interpreter each running as a different thread in the kernel space of the host operating system”.

8. Regarding Claim 33, the prior art of record does not teach or fairly suggest at least:

“...wherein the emulation system may comprise multiple instances of the interpreter each running as a different thread in the kernel space of the host operating system”.

Therefore, claim 33 is in condition for allowance.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

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Response to Arguments

8. Applicant's arguments with respect to claims 1 - 33 have been considered but are moot in view of the new ground(s) of rejection.


Regarding Applicants addition of “ interpretation directly by the host computer” into claims 1, 9, 19 and 27, Examiner still believes that the prior art (Goettlemann) discloses this limitation. In fact Goettlemann disclosure is solely based on direct conversion, i.e. using interpretation and translation. Goettlemann better teaches this limitation in Col.13: 63 – Col. 14: 3, see translating directly to target machine, also refer to 31:50 – 55, for interpretation.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuck Kendall whose telephone number is 571-2723698. The examiner can normally be reached on 10:00 am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on 571-2723695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


TUAN DAM
SUPERVISORY PATENT EXAMINER